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10/538,652	10/31/2005	Franciscus Cornelius Dings	008895-0316415	3724
909 7590 12/23/2008 PILLSBURY WINTHROP SHAW PITTMAN, LLP P.O. BOX 10500 MCLEAN, VA 22102				
EXAMINER				
LOUIE, MANDY C				
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/538,652

**Applicant(s)**

DINGS ET AL.

**Examiner**

MANDY C. LOUIE

**Art Unit**

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 16-30 and 32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 31 is/are rejected.
- 7) ☒ Claim(s) 1 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB-08)  
Paper No(s)/Mail Date 06/29/05, 06/10/05

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

#### **DETAILED ACTION**

1. Applicant's election with traverse of Group I, claims 1-15, 31 in the reply filed on 11/20/08 is acknowledged. The traversal is on the ground(s) that the prior art, Hu et al., provided does not teach "the plasma source and/or a fluid supply source is moveably arranged". Although the prior art does not indicate the plasma source being moved, Hu et al. does teach the substrate being moved relative to the plasma source for preparing a desirable concentration of treatment over the substrate [0023], where it would have been obvious to one with ordinary skill in the art to use with reasonable success, each of the finite number of ways to optimize the distance between the plasma source and the substrate for a desirable coating of the substrate, and would be unpatentable over the provided references in this office action. Therefore, since the special technical feature of the instant application lacks an inventive step there is a lack of unity among the grouped inventions (See MPEP 1850.II).

The requirement is still deemed proper and is therefore made FINAL.

#### ***Status of the Claims***

2. Claims 1-15 and 31 are under consideration in this office action.
3. Claims 16-30 and 32 are withdrawn to non-elected inventions.

***Claim Objections***

4. Claims 1 and 14 are objected to because of the following informalities: claim 1: "far" should be corrected to "for"; claim 14: is and/or of line 4 should be omitted. Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 3-4, 6, 8, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. [US 5403399] in view of Schram et al. [US 4871580].

Regarding claim 1, Kurihara et al. teaches a method and apparatus for vapor deposition [title] with a plasma jet to treat a substrate [abstract], wherein the substrate (120) is placed in a process chamber with a plasma torch (115) (plasma source) [Fig. 24], and the plasma torch and substrate holder (119) containing the substrate can be controlled by manipulators (123, 127), to move relative to the plasma jet and the substrate for growing a uniform film [col 20, ln 50-25]. Kurihara et al. is silent to using a cascade source as the plasma source. Schram et al. remedies this.

Regarding claim 1, Schram et al. teaches a method of treating a substrate with the aid of a plasma [abstract], where the plasma source can be a cascade-arc plasma generator [Fig. 2], where the plasma generator (13) is incorporated into a chamber (2) (pre-chamber) that is accommodated together with a plasma-treatment chamber (3) (process chamber) [Fig. 1], and where the cascade-arc plasma generator contains cascade-plates that are electrically insulated [col 6, ln 6-8] which are bounded to form a central channel (19) [col 6, ln 4; Fig. 2]. The chamber opens into the treatment chamber via a plasma inlet (4) [col 4, ln 54-55], where an anode nozzle is located at the end of the channel [col 6, ln 16-17, Fig. 2], and the initiation of the plasma generation occurs in the central channel [col 5, ln 59-60], where the plasma is extracted from the anode nozzle [col 7, ln 14-15] into the plasma-treatment chamber to form a plasma jet and

treat the substrate. Furthermore, Schram et al. teaches the cascade source is present in a pre-chamber in which, during use, a relatively high pressure prevails compared to a relative low pressure prevailing the process chamber [col 5, ln 13-27]. It would have been obvious to one with ordinary skill in the art at the time of the invention to substitute the plasma torch of Kurihara with the enclosed cascade arc plasma generator (with additional features related to the cascade plasma) to treat a substrate in a process chamber. One would have been motivated to do so in order to reduce plasma contamination during high-temperature plasma generation [Schram, col 1, ln 50-53], be enabled to use reagents of various forms and avoid stagnation in flow that would result in deposition of material onto undesirable places [Schram, col 2, ln 2-12], while efficiently treat the substrate [Schram, col 2, ln 23-31].

Regarding claims 3-4, Kurihara in view of Schram teaches manipulators can be moved relative to the substrate, where it would have been apparent to one with ordinary skill in the art that the results of such mechanics as shown in Fig. 24 of Kurihara, would move the plasma source in a direction towards or away from the substrate in a lateral direction for uniform treatment of the substrate.

Regarding claim 6, Kurihara in view of Schram teaches a treatment fluid is added to the plasma [Schram, col 4, ln 64-65].

Regarding claim 8, Kurihara in view of Schram teaches the treatment fluid is supplied to the pre-chamber of the cascade source [Schram, Fig. 1], near the cascade source cathode present in the pre-chamber [Schram, col 6, ln 35-40].

Regarding claim 11, Kurihara in view of Schram teaches the position and direction of the plasma source can be controlled by manipulators in which the movement of the source would allow each part of the substrate surface to be reached by the same amount of plasma [Schram, col 20, ln 20-25].

Regarding claim 13, Kurihara in view of Schram teaches the plasma source is mounted on the process chamber [Kurihara, Fig. 24, 16].

5. Claims 2, 5, 12, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. in view of Schram et al., further in view of Hawley et al. [US 6068201]

Teaching of Kurihara in view of Schram is aforementioned, but is silent to rotating the plasma source or treatment fluid supply source about a rotation axis that extends parallel to the substrate surface. Hawley et al. remedies this.

Regarding claim 2, Hawley et al. teaches an invention that moves a thermal spray gun over a substrate in a figure eight configuration [abstract], where such robot or handling device allows the gun to traverse in x,y, z, and/or angular motion over a large substrate [col 3, ln 52-60]. Furthermore, Hawley et al. teaches that such gun may move in a pivotal motion [col 5, ln 39-56]. It would have been apparent to one with ordinary skill in the art that such moving mechanism is capable of rotating the spray gun about a rotation axis that is extends parallel to the substrate surface, due to the swiveling motions provided by such means for movement of the deposition apparatus. Moreover, it would have been obvious to one with ordinary skill in the art at the time of the invention to apply such pivotal mechanism with the means for translating the plasma

source taught by the prior art. One would have been motivated to do so in order to reduce over-heating and depositing coating material, which may lead to undesirable properties of the substrate [Hawley, col 1, ln 43-47] and increase uniformity of the coating thickness [Hawley, col 2, ln 26-27] and increase movement control to reduce waste of deposition material [Hawley, col 1, ln 49-51] in an efficient manner.

Regarding claim 5, Kurihara in view of Schram and Hawley teaches the plasma source and/or treatment fluid supply source can deposit material in a figure of eight configuration on the substrate [Hawley, abstract]. It would have been apparent to one with ordinary skill in the art that such moving mechanism would be capable of rotating such sources about an axis extending perpendicularly relative to the substrate surface from making a circular deposition pattern on the substrate.

Regarding claim 12, Kurihara in view of Schram and Hawley teaches the deposition of the material upon the substrate may vary in thickness along the ends of the figure eight configuration and that such variance can be compensated with the control system [Hawley, col 6, ln 37-45], where it would have been apparent to one with ordinary skill in the art that such controlled mechanism for determining the movement of the sources would be, in fact, capable of treating a first part of the substrate with a greater extent than a second part of the substrate by means of manipulating the direction of the treatment and length of time held as results of modifying workable parameters.



Regarding claim 15, Kurihara in view of Schram and Hawley teaches the plasma source and/or treatment fluid supply source can carry out at least one three-dimensional movement [Hawley, col 3, ln 57-60].

6. Claims 7, and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. in view of Schram et al., further in view of Yoshizawa [US 6490994].

Teaching of Kurihara in view of Schram is aforementioned, but is silent to the limitations of claims 7 and 9-10. Yoshizawa remedies this.

Regarding claim 7, Yoshizawa teaches an invention of a plasma processing that allows processing of high quality under wider processing conditions by optimizing the distance between a plasma region and a substrate [abstract], where the amount of treatment fluid to be added to the plasma is related to the movement of the plasma source [col 4, ln 6-35; col 6, ln 60-64]. It would have been obvious to one with ordinary skill in the art at the time of the invention to apply the moving means taught by Yoshizawa with the plasma treatment method taught by the prior arts to control the distance between the plasma source and the surface of the substrate. One would have been motivated to do so in order to provide a plasma processing that allows processing of high quality [Yoshizawa, col 2, ln 44], and control the volume of reacts for the treatment of the substrate, in return, to control the amount of damage or contamination on the surface of the substrate [Yoshizawa, col 2, ln 33-36] with desirable stability [Yoshizawa, col 4, ln 35-36].

Regarding claim 9, Kurihara in view of Schram and Yoshizawa teaches, between the plasma source and the substrate surface, the treatment fluid supply source can be arranged to add the treatment fluid to the plasma [Yoshizawa, Fig. 1].

Regarding claim 10 Kurihara in view of Schram and Yoshizawa teaches the treatment fluid supply source is moved relative to the substrate surface, where the movement of the treatment fluid source is related to the movement of the plasma source [Yoshizawa, Fig. 3(a-c)].

7. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. in view of Schram et al., further in view of Yang et al. [US 6397776].

Teaching of Kurihara in view of Schram is aforementioned, but is silent to adding the treatment fluid for plasma enhanced chemical vapor deposition (PECVD). Yang remedies this.

Regarding claim 31, Yang teaches an invention of performing a chemical vapor deposition using a plurality of expanding thermal plasma generating means to produce a coating on a substrate [abstract], where such invention is related to plasma enhanced chemical vapor deposition [col 1, ln 7], and the reagent (treatment fluid) are supplied into the plasma [col 5, ln 19-20] for such deposition of the substrate. It would have been obvious to one with ordinary skill in the art at the time of the invention to provide the treatment fluid for the purpose of a PECVD as taught by Yang. One would have been motivated to do so in order to be adapted to efficiently coat a large substrate, and be modified to yield a coating with desirable properties (i.e. quality), including uniformity and reproducibility.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurihara et al. in view of Schram et al., further in view of Yao et al. [US 6051114].

Teaching of Kurihara in view of Schram is aforementioned, but is silent to the substrate being provided with at least one cavity. Yao remedies this.

Regarding claim 14, Yao et al. teaches an invention for depositing upon an integrated circuit structure, where the invention utilizes high density plasma for deposition on a patterned substrate [abstract]. Where during treatment, at least a part of the plasma source and/or at least said treatment fluid supply source has been introduced into the substrate cavity [col 4, ln 50-57], where the substrate is provided with at least one cavity at least partly bounded by the substrate surface [col 5, ln 36-37]. It would have been obvious to one with ordinary skill in the art at the time of the invention to treat a cavity bounded by the substrate with a plasma related deposition technique. One would have been motivated to do so in order to avoid "shadowing" in which excessive material shields material from reaching the sidewalls and floor of the cavity, which is difficult to selectively treat such cavities, and develop an improved technique of selective deposition.

### ***Double Patenting***

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140

F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thornton*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1, 3-4, 6-10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 51-83 of copending Application No. 10/518695 (hereinafter '695) in view of Yoshizawa [US 6490994].

Regarding claim 1, '695 teaches providing a plasma cascade source, introducing a substrate into a chamber, and depositing treatment fluid upon the substrate. It would have been apparent to one with ordinary skill in the art that a plasma cascade source would contain the structural elements such as a channel bounded by mutually electrically insulated cascade plates, and extend the plasma from the channel to the chamber. '695 is silent to the cascade source being present in a prechamber, and moving such plasma source. Yoshizawa remedies this.

Regarding claim 1, teaching of Yoshizawa is aforementioned and further disclose the separating the plasma source from the processing chamber where processing conditions such as process pressure may differ [abstract], where one would have been motivated to apply Yoshizawa with the method '695 to treat a substrate with an aid of a

movable plasma source. One would have been motivated to do so in order to provide a plasma processing that allows processing of high quality [Yoshizawa, col 2, ln 44], and control the volume of reacts for the treatment of the substrate, in return, to control the amount of damage or contamination on the surface of the substrate [Yoshizawa, col 2, ln 33-36] with desirable stability [Yoshizawa, col 4, ln 35-36].

Regarding claims 3-4, 6-10, teaching of '695 in view of Yoshizawa is previously disclosed and meets the limitations of the above claims.

This is a provisional obviousness-type double patenting rejection.

11. Claims 1, 3, 4, 6-10, 31 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-19 of copending Application No. 10/583914 (hereinafter '914) in view of Yoshizawa [US 6490994].

Regarding claims 1 and 31 '914 teaches providing a plasma cascade source, introducing a substrate into a chamber, and depositing treatment fluid upon the substrate, where the deposition technique may be for the purpose of PECVD. It would have been apparent to one with ordinary skill in the art that a plasma cascade source would contain the structural elements such as a channel bounded by mutually electrically insulated cascade plates, and extend the plasma from the channel to the chamber. '914 is silent to the cascade source being present in a prechamber, and moving such plasma source. Yoshizawa remedies this.

Regarding claim 1, teaching of Yoshizawa is aforementioned and further disclose the separating the plasma source from the processing chamber where processing

conditions such as process pressure may differ [abstract], where one would have been motivated to apply Yoshizawa with the method '914 to treat a substrate with an aid of a movable plasma source. One would have been motivated to do so in order to provide a plasma processing that allows processing of high quality [Yoshizawa, col 2, ln 44], and control the volume of reacts for the treatment of the substrate, in return, to control the amount of damage or contamination on the surface of the substrate [Yoshizawa, col 2, ln 33-36] with desirable stability [Yoshizawa, col 4, ln 35-36].

Regarding claims 3-4, 6-10, teaching of '914 in view of Yoshizawa is previously disclosed and meets the limitations of the above claims.

This is a provisional obviousness-type double patenting rejection.

12. Claims 1, 3, 4, 6-10, 31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 6946404 (hereinafter '404) in view of Yoshizawa [US 6490994].

Regarding claims 1 and 31 '404 teaches providing a plasma cascade source, introducing a substrate into a chamber, and depositing treatment fluid upon the substrate, where the deposition technique may be for the purpose of PECVD. It would have been apparent to one with ordinary skill in the art that a plasma cascade source would contain the structural elements such as a channel bounded by mutually electrically insulated cascade plates, and extend the plasma from the channel to the chamber. '404 is silent to the cascade source being present in a prechamber, and moving such plasma source. Yoshizawa remedies this.

Regarding claim 1, teaching of Yoshizawa is aforementioned and further disclose the separating the plasma source from the processing chamber where processing conditions such as process pressure may differ [abstract], where one would have been motivated to apply Yoshizawa with the method '404 to treat a substrate with an aid of a movable plasma source. One would have been motivated to do so in order to provide a plasma processing that allows processing of high quality [Yoshizawa, col 2, ln 44], and control the volume of reacts for the treatment of the substrate, in return, to control the amount of damage or contamination on the surface of the substrate [Yoshizawa, col 2, ln 33-36] with desirable stability [Yoshizawa, col 4, ln 35-36].

Regarding claims 3-4, 6-10, teaching of '404 in view of Yoshizawa is previously disclosed and meets the limitations of the above claims.

13. Claims 1, 3-4, 6-10 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 53-58 of copending Application No. 10/557043 (hereinafter '043) in view of Yoshizawa [US 6490994].

Regarding claim 1, '043 teaches providing a plasma cascade source, introducing a substrate into a chamber, and depositing treatment fluid upon the substrate. It would have been apparent to one with ordinary skill in the art that a plasma cascade source would contain the structural elements such as a channel bounded by mutually electrically insulated cascade plates, and extend the plasma from the channel to the chamber. '043 is silent to the cascade source being present in a prechamber, and moving such plasma source. Yoshizawa remedies this.

Regarding claim 1, teaching of Yoshizawa is aforementioned and further disclose the separating the plasma source from the processing chamber where processing conditions such as process pressure may differ [abstract], where one would have been motivated to apply Yoshizawa with the method '043 to treat a substrate with an aid of a movable plasma source. One would have been motivated to do so in order to provide a plasma processing that allows processing of high quality [Yoshizawa, col 2, ln 44], and control the volume of reacts for the treatment of the substrate, in return, to control the amount of damage or contamination on the surface of the substrate [Yoshizawa, col 2, ln 33-36] with desirable stability [Yoshizawa, col 4, ln 35-36].

Regarding claims 3-4, 6-10, teaching of '043 in view of Yoshizawa is previously disclosed and meets the limitations of the above claims.

This is a provisional obviousness-type double patenting rejection.

### ***Conclusion***

1. No claim is allowed.
2. All the pending claims are subject to restriction/election requirement.
3. Claims 16-30 and 32 are withdrawn from restriction election.
4. Claims 1 and 14 are objected for the reasons aforementioned.
5. Claims 1-15 and 31 are rejected for the reasons aforementioned.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MANDY C. LOUIE whose telephone number is



(571)270-5353. The examiner can normally be reached on Monday to Friday, 7:30AM - 5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on (571)272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/M. C. L./  
Examiner, Art Unit 1792

/Timothy H Meeks/  
Supervisory Patent Examiner, Art Unit 1792

